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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Jane E. Tateson

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NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD, 11TH FLOOR
ARLINGTON, VA 22203

EXAMINER

LIU, BEN H

ART UNIT

PAPER NUMBER

2616

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/560,617	TATESON, JANE E.	
	Examiner	Art Unit	
	BEN H. LIU	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>April 6, 2006</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7 recites the limitation "the first and second nodes" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 8 is rejected under 35 U.S.C. 102(b) as being anticipated by Loher (WO 99/46899).

For claim 8, Loher disclose a network of wireless relay devices comprising a plurality of mobile wireless relay devices capable of receiving payload data (*see page 1 lines 4-8, which recite a relay station that receives packets from a source station*), and each having means for identifying a forwarding direction relative to itself (*see page 8 lines 15-21, which recite choosing which neighboring nodes to forward packets*), and means for transmitting data to another of the devices whose current position is in the said forwarding direction and within a predetermined distance (*see page 1 lines 4-8, which recite a relay station that transmits packets to a station*),

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wherein the devices cooperate to define their forwarding directions such that payload data is transmitted to a target sink device by means of one or more of the wireless relay devices (*see page 7 lines 12-21, which recite relay stations that mutually listen to each other to determine the routing direction of packets*).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-7 and 9-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Loher (WO 99/46899) and Kuchibhotla et al. (U.S. Patent 6,993,342).

For claim 1, Loher disclose a mobile data wireless relay device, the device having receiving means for receiving payload data from a data source, a buffer for storing payload data

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for subsequent transmission (*see page 1 lines 4-8, which recite a relay station that receives packets from a source station*), means for receiving status data from similar devices (*see page 2 lines 22-32, which recite a relay station that receives information autonomously monitored about its neighbor stations*), status data generation means for generating status data, the status data being derived from the status data received from other devices, and comprising data relating to the position of the device (*see page 4 lines 22-25, which recite determining the position of the mobile relay stations*), a scalar forwarding value and a forwarding direction, status transmitter means for transmitting status data to other devices (*see page 6 lines 12-26, which recite a packet structure that includes status information derived from other nodes*), selection means for identifying from the status data a receiving device to which the payload data is to be forwarded, the receiving device being located in a position indicated by the forwarding direction (*see page 8 lines 15-21, which recite choosing which neighboring nodes to forward packets*), and payload transmission means for transmitting the payload data to the receiving device (*see page 1 lines 4-8, which recite a relay station that transmits packets to a station*).

Loher disclose all the subject matter of the claimed invention with the exception wherein the status data generation means uses data including the quantity of data in the buffer store of the relay station and neighboring relay stations. Kuchibhotla et al. from the same or similar fields of endeavor disclose a method for transmitting buffer occupancy information in a wireless network (*see column 6 lines 17-38*). Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the method of reporting buffer occupancy as taught by Kuchibhotla et al. with the method of operating a plurality of mobile data wireless relay devices that mutually report status information as taught by Loher. The method of reporting buffer

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occupancy as taught by Kuchibhotla et al. can be implemented by inserting the buffer occupancy information in the header field of packets exchanged between relay stations that report status information as taught by Loher. The motivation for reporting the buffer occupancy as taught by Kuchibhotla et al. with the method of operating a plurality of mobile data wireless relay devices that report status information as taught by Loher is to improve the efficiency of the wireless system by choosing a forwarding relay station based upon the amount of data to be transferred by each node.

For claim 2, Loher disclose a mobile data wireless relay device comprising means for receiving payload data transmitted by other similar devices (*see page 1 lines 4-8*).

For claim 3, Loher disclose a mobile data wireless relay device further comprising a data source (*see page 1 lines 4-8*).

For claims 4 and 11, Loher disclose a mobile data wireless relay device wherein the selection means is arranged to only identify a suitable receiving device if the scalar forwarding value meets a threshold criterion (*see page 8 lines 15-21, which recite choosing which relay station to forward a packet based upon various status values*).

For claims 5 and 12, Loher disclose a mobile data wireless relay device further comprising condition-monitoring means for monitoring the expected lifetime of the device, and adjusting the scalar forwarding value accordingly (*see page 8 lines 15-21, which recite monitoring the remaining power available at the neighbor relay station*).

For claims 6 and 13, Loher disclose a mobile data wireless relay device the wireless relay device has means for receiving data broadcast by similar wireless relay devices identifying the position data and attribute values of nodes defined by the similar wireless relay devices (*see*

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page 2 lines 22-32, which recite a relay station that receives information autonomously monitored about its neighbor stations), means for generating position values for the first and second nodes based on the attribute values of its own nodes and the positions and attribute values of the nodes defined by the neighboring devices (*see page 4 lines 22-25, which recite determining the position of the mobile relay stations*), means for transmitting the position data and attribute values to similar wireless relay devices (*see page 6 lines 12-26, which recite a packet structure that includes status information derived from other nodes*), means for transmitting payload data to devices that are in the general direction of the second node (*see page 1 lines 4-8, which recite a relay station that transmits packets to a station*).

Loher disclose all the subject matter of the claimed invention with the exception wherein the wireless relay device comprises a means for defining a first node and a second node, the nodes being spaced apart by a distance determined by the amount of data stored in the buffer, the first node being assigned a positive value for an attribute q and the second node being assigned a negative value for the attribute q , equal in magnitude to that assigned to the positive node. Kuchibhotla et al. from the same or similar fields of endeavor disclose a method for transmitting buffer occupancy information in a wireless network (*see column 6 lines 17-38*). The transmitted buffer occupancy data can be combined with distance data gathered by the wireless relay device as taught by Loher to determine an attribute value for the nodes. Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the method of reporting buffer occupancy as taught by Kuchibhotla et al. with the method of operating a plurality of mobile data wireless relay devices that mutually report status information as taught by Loher to generate an attribute value for the nodes. The method of reporting buffer occupancy

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as taught by Kuchibhotla et al. can be implemented by inserting the buffer occupancy information in the header field of packets exchanged between relay stations that report status information as taught by Loher. The motivation for reporting the buffer occupancy as taught by Kuchibhotla et al. with the method of operating a plurality of mobile data wireless relay devices that report status information as taught by Loher is to improve the efficiency of the wireless system by choosing a forwarding relay station based upon the amount of data to be transferred by each node.

For claims 7 and 14, Loher disclose a mobile data wireless relay device wherein the positions of the first and second nodes are determined by determining the position in which the aggregate value of the products of the attribute values of each node with each node of one or more neighboring devices, and an arithmetical function of the distance between them, is a minimum or maximum (*see page 8 lines 23-34, which recite determining the distance and position of the neighboring nodes*).

For claims 9 and 15, Loher disclose a network of wireless relay devices wherein each device defines a positive receive node and a negative transmit node, spaced a predetermined distance apart, and the devices cooperate to define the positions of the nodes so as to minimize the aggregate distances between nodes having opposite signs, and wherein the forwarding direction of each device is defined as the direction from its receive node in which its transmit node lies (*see page 4 lines 28-30 and page 14 lines 15-17, which recite deciding the next station to transmit a packet based upon the distance between nodes using unidirectional communication*).

For claim 10, Loher disclose a method of operating a plurality of mobile data wireless relay devices, comprising collecting data in buffer stores in one or more such devices, exchanging status data between the devices (*see page 7 lines 12-21, which recite relay stations that mutually listen to each other to determine the routing direction of packets*), the status data comprising data relating to the positions of the devices (*see page 4 lines 22-25, which recite determining the position of the mobile relay stations*), each device defining, from the status data, a forwarding direction towards which the payload data in its buffer store is to be forwarded (*see page 8 lines 15-21, which recite choosing which neighboring nodes to forward packets*), transmitting the stored payload data to a device located in the forwarding direction (*see page 1 lines 4-8, which recite a relay station that transmits packets to a station*).

Loher disclose all the subject matter of the claimed invention with the exception wherein the status data generation means uses data including the quantity of data in the buffer store of the relay station and neighboring relay stations. Kuchibhotla et al. from the same or similar fields of endeavor disclose a method for transmitting buffer occupancy information in a wireless network (*see column 6 lines 17-38*). Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the method of reporting buffer occupancy as taught by Kuchibhotla et al. with the method of operating a plurality of mobile data wireless relay devices that mutually report status information as taught by Loher. The method of reporting buffer occupancy as taught by Kuchibhotla et al. can be implemented by inserting the buffer occupancy information in the header field of packets exchanged between relay stations that report status information as taught by Loher. The motivation for reporting the buffer occupancy as taught by Kuchibhotla et al. with the method of operating a plurality of mobile data wireless relay devices

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that report status information as taught by Loher is to improve the efficiency of the wireless system by choosing a forwarding relay station based upon the amount of data to be transferred by each node.

For claim 16, Loher disclose a method of operating a plurality of mobile data wireless relay devices wherein the devices co-operate to define their forwarding directions such that payload data is transmitted, by means of one or more of the wireless relay devices, to a target sink device defined by a receive node (*see page 1 lines 3-8*).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. (*See form PTO-892*).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BEN H. LIU whose telephone number is (571)270-3118. The examiner can normally be reached on 9:00AM to 6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Firmin Backer can be reached on (571) 272-6703. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR

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system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BL

/FIRMIN BACKER/

Supervisory Patent Examiner, Art Unit 2616